

REMARKS

Claims 1-16 and 18-21 are pending in this application, claims 8-13 having been withdrawn from consideration as drawn to a non-elected species. By this Amendment, claims 1-3, 8, 11, 14 and 15 are amended, and claim 17 is canceled, without prejudice to or disclaimer of the subject matter contained therein. Claim 2 is amended to correct a typographical error. Claim 3 is amended to clarify the language of the claim. Support for this amendment can be found in claim 3 as originally filed. Claims 1, 8, 11, 14 and 15 are amended to clarify that the carbon nanotube electrode and the biopolymer are fixed together in an electrically connected state. Support for these amendments can be found in the specification as filed, for example, at least at page 7, lines 7-10 and page 15, lines 1-13 and 18-20. Thus, no new matter is added by these amendments.

Also by this Amendment, claims new claims 18-21 are added. Support for new claims 18-21 can be found in the specification as originally filed, for example, at page 2, lines 1-4 and in the original claims, for example, in original claim 1. Thus, no new matter is added by the addition of claims 18-21.

I. Claim Objections

The Office Action objects to claim 17 as being of improper dependent form for failing to further limit the subject matter of a previous claim. By this Amendment, claim 17 has been canceled. Accordingly, withdrawal of this objection is respectfully requested.

II. Rejection Under 35 U.S.C. §112, Second Paragraph

The Office Action rejects claims 1-7 and 14-17 under 35 U.S.C. §112, second paragraph, as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as their invention. Applicants respectfully traverse this rejection.

By this Amendment, claim 17 has been canceled. Thus, Applicants respectfully submit that this rejection is moot as to claim 17 and should be withdrawn.

Claims 1, 8, 11, 14 and 15 have been amended herein to clarify that a direct electrical connection is formed between the carbon nanotube electrode and the biopolymer.

Thus, Applicants respectfully submit that claims 1-7 and 14-16 are not indefinite. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

III. Rejection Under 35 U.S.C. §102

A. U.S. Patent 5,866,434 to Massey et al.

The Office Action rejects claims 1-7, 14, 16 and 17 under 35 U.S.C. §102(b) and §102(e) over U.S. Patent 5,866,434 to Massey et al. By this Amendment, claim 17 has been canceled. Thus, Applicants respectfully submit that this rejection is moot as to claim 17 and should be withdrawn. Applicants respectfully traverse this rejection with respect to claims 1-7, 14 and 16.

Independent claim 1 sets forth a "production method of an electrical connection structure, the method comprising the steps of: providing at least one carbon nanotube as an electrode to an arbitrary portion of a biopolymer; and contacting the electrode with the biopolymer at the arbitrary portion; wherein the electrode and the biopolymer are fixed together in a stable electrically connected state." Independent claim 14 sets forth an "electric wiring method, comprising the step of electrically connecting at least one carbon nanotube provided as an electrode to a biopolymer, wherein the electrode and the biopolymer are fixed together at an arbitrary portion of the biopolymer in a stable electrically connected state." Similarly, new claims 18 and 21 set forth a "production method of an electrical connection structure, the method comprising the steps of: providing at least one carbon nanotube as an electrode to an arbitrary portion of a biopolymer; and contacting the electrode with the biopolymer at the arbitrary portion; wherein the electrode and the biopolymer are fixed

together in a stable electrically connected state, and wherein contacting the electrode with the biopolymer comprises synthesizing the biopolymer onto the carbon nanotube” and a “production method of a semiconductor device including an electrical connection structure, the method comprising the steps of: providing at least one carbon nanotube with the biopolymer at the arbitrary portion; contacting the electrode with the biopolymer at the arbitrary portion; wherein the electrode and the biopolymer are fixed together in a stable electrically connected state,” respectively.

In order to anticipate a claim, the reference must disclose, in specific embodiments, all limitations of the claim. That is, a prior art reference anticipates the claimed invention only where all claimed elements or steps of the claimed invention are disclosed, either expressly or inherently, in the reference. Scripps Clinic & Research Foundation v. Genentech, Inc., 927 F.2d 1565, 1576, 18 USPQ2d 1001, 1010 (Fed. Cir. 1991); In re Marshall, 577 F.2d 301, 198 USPQ 344 (CCPA 1978). Massey does not disclose, in specific embodiments, each and every limitation of the invention of independent claims 1 and 14 or their respective dependent claims, and thus cannot anticipate claims 1-7, 14 and 16.

Massey discloses carbon nanotubes used as electrochemiluminescence-based biosensors. As such, the carbon nanotubes supply electricity to electrochemical reactions, which produce luminescent biochemicals. The carbon nanotubes of Massey are modified with avidin, and the DNA disclosed in Massey are bonded with biotin to form an analyte of biotinylated DNA. See Massey, col. 40, lines 39-48. The biotinylated DNA analyte connects to the avidin fibrils and is detected by electrochemiluminescence. See Massey, col. 40, lines 39-48. That is, the DNA probe of Massey forms a fibril-avidin-biotin-DNA complex due to the high affinity of avidin with biotin. However, nothing in Massey discloses connecting the carbon nanotubes to an arbitrary portion of the biopolymer.

In contrast, the carbon nanotube electrodes of claims 1 and 14 are not only fixed to the biopolymers in an electrically connected state, but also are stably connected at an arbitrary portion of the biopolymer. Accordingly, Massey does not disclose a production method or an electrical wiring method for such an electrical connection structure, as in claims 1 and 14, respectively.

Thus, Massey does not disclose every limitation of claims 1 and 14. Similarly, new claims 18 and 21 require the connection of the carbon nanotube and biopolymer at an arbitrary portion. Thus, Massey does not disclose every limitation of claims 18 and 21. Claims 2-7 and new claims 19 and 20 depend from claim 1 and include all of the limitations of claim 1. Claim 16 depends from claim 14 and includes all of the limitations of claim 14. Therefore, for at least the same reasons as discussed with respect to claims 1 and 14, Massey does not disclose every limitation of claims 2-7, 16 and 18-21.

Accordingly, Applicant respectfully submits that claims 1-7, 14, 16 and 18-21 are patentable over Massey. Reconsideration and withdrawal of this rejection are respectfully requested.

B. U.S. Patent 6,576,341 to Davey et al.

The Office Action rejects claims 1, 2, 4, 5, 7, 14 and 17 under 35 U.S.C. §102(e) over U.S. Patent 6,576,341 to Davey et al. By this Amendment, claim 17 has been canceled. Thus, Applicants respectfully submit that this rejection is moot as to claim 17 and should be withdrawn. Applicants respectfully traverse this rejection with respect to claims 1, 2, 4, 5, 7 and 14.

Independent claims 1, 14, 18 and 21 are as set forth above.

Davey discloses a process for extracting carbon nanotubes from the "soot" in which they are formed. Polymers such as DNA are useful in this process because of their coiling structure.

Davey, col. 3, lines 31-32. Davey teaches contacting coiling polymers with carbon nanotubes to extract the nanotubes from the "soot."

Davey does not disclose contacting a carbon nanotube provided as an electrode with a biopolymer. Davey also does not disclose contacting a carbon nanotubes provided as an electrode with a biopolymer such that the carbon nanotube electrode and the biopolymer are fixed together at an arbitrary portion in an electrically conductive state. Davey does not disclose the production method of an electrical connection structure as in claim 1 or the electrical wiring method of claims 14.

Thus, Davey does not disclose every limitation of claims 1 and 14. Similarly, new claims 18 and 21 require the connection of the carbon nanotube and biopolymer at an arbitrary portion. Thus, Davey does not disclose every limitation of claims 18 and 21. Claims 2, 4, 5 and 7 and new claims 19 and 20 depend from claim 1 and include all of the limitations of claim 1. Claim 16 depends from claim 14 and includes all of the limitations of claim 14. Therefore, for at least the same reasons as discussed with respect to claims 1 and 14, Davey does not disclose every limitation of claims 2, 4, 5, 7 and 18-21.

Accordingly, claims 1, 2, 4, 5, 7, 14 and 18-21 are patentable over Davey. Reconsideration and withdrawal of this rejection are respectfully requested.

IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-16 and 18-21 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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